Fe_3O_4, with a tendency to separate again into FeO, Fe_2O_3; that it is really in combination as Fe_3O_4, but ready to yield to slight causes and become FeO, Fe_2O_3. This would explain Mr. Mercer's experiment (quoted by Brande, I. 716, edition 1848) of the chemical union of a mechanical mixture of protoxide and peroxide of iron.

Perhaps the sesquioxides occupy a middle place in the scale of effects. Take the case of iron; we have

$Fe + O$, pyrophorus,—violent oxidation,
$Fe_2O_3 + NH_3 + O$, alternate reduction and oxidation,
$Fe\,O_3 + NH_3$ (in water), reduction.

To show the last, add ammonia to a solution of FeO_3, KO, and Fe_2O_3 will be precipitated.

A mixture of ten parts by weight of powdered chlorate of potassa with one part of Fe_2O_3 disengages oxygen with extreme facility and great economy of heat as compared with the oxides of copper and manganese; and it is the more convenient because *n* grains of the mixture will represent almost exactly *n* cubic inches of disengaged oxygen.

A state of mechanical division is not absolutely necessary for the catalysation of some inflammable vapours by Fe_2O_3; an old nail, entirely transmuted into rust, will perform the operation; and when we consider that in many cases of fermentation, decay and putrefaction, this oxide may be present, divided or aggregated, while heat is evolved, and inflammable gases and vapours are set free, we may hereafter be able to trace some instances of "spontaneous combustion" to the catalytic action of the sesquioxides of iron.

III. "Ocular Spectres and Structures as Mutual Exponents." By James Jago, A.B. Cantab., M.B. Oxon., Physician to the Royal Cornwall Infirmary. Communicated by Professor Stokes, Sec. R.S. Received March 5, 1855.

The present communication is a revised and modified version of a paper bearing the same title, which was read on the 18th of January and 1st of February, and which was, by permission, withdrawn. The chief modification applies to the author's views respecting the struc-

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ture of the vitreous body as deduced from entoptical phenomena. He is now of opinion that the arborescent system of which he infers the existence in that part of the eye (Proceedings, p. 209) does not consist of *tubes* filled with globules or cells, as he at first supposed, but of cell-constituted filaments. In a note, dated March 27, 1855, he gives the following enunciation of his present views as to the structure of the vitreous body :—

"In the vitreous humour are innumerable transparent globules, beads or cells, of less specific gravity than the fluid, extremely minute, and of uniform size, which are arranged, *without exception*, in rows to form the threads of a lax, elongated, irregular web, springing from the general surface of the capsule by, commonly, exquisitely small meshes, and extending into the interior by others of increasing size, so that the innermost part of the web—which lies nearer the circumference of the vitreous body than its centre—consists of comparatively large ones.

"Whenever the eye rotates, this filamentous peripheral system will in its relative (counter) rotation, *gradually, though soon*, come to the end of its tether, and in this interval and when there, act as a check upon the relatively rotating fluid; perpetually reiterating obstruction, above all in the immediate vicinity of the capsule and (by the disposition of the threads to float vertically) most effectually in the most important or horizontal direction. The middle of the vitreous body being free of impediment, relative rotation of the fluid expends itself there, whilst a practical concurrence in the ocular rotation ensues near the capsule. And thus in the incessant movements of the eye, head and body, the wall that confines the fluid can suffer no severe concussions from eddies in the latter. In other words, we have herein a provision that the crystalline lens may not be shaken, the circulation in the retinal vessels may not be deranged, and sensations of light may not be ever assailing us from impulses of the vitreous fluid, perhaps that the retina may not itself suffer direct injury therefrom."